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To Fly a Falcon: An Exercise in Bureaucratic Politics

> To explain why a particular formal governmental decision was made . . . it is necessary to identify the games and players, to display the coalitions, bargains, and compromises, and to convey some feel for the confusion.
>
> Graham T. Allison in Essence of Decision (2, 146)

To procure a new major weapons system, one might envision an orderly process of articulating a need based on a scenario and a threat, identifying candidates to fulfill that need, selecting the best, and then negotiating a price with the winning contractor. And, in fact, this process has been followed--at times, but not always. The decision to produce the F-16 "Fighting Falcon" for the US Air Force was not a solution discovered by detached analysts focusing coolly on the problem. Rather, the explanation really lies in a complex game of negotiations, bargaining, and deals involving a number of influential players within the government, in industry, and overseas. This paper analyzes this "game"--a procurement decision that was an outcome of bureaucratic politics. We will review the factors leading up to the decision, look at the players involved, then analyze the process which brought these players into a final decision.

Background

A 1968 study called "FXX" or "FX^2" claimed that the AF, given its current funding trend over a ten year period, could afford only about 1,200 F-111s, F-4s, and F-15s (the original "FX"), but an alternative force of 4,200 "austere" planes could be bought and operated for the same money (9, 9). At about the same time, the NATO air forces were considering a replacement for their aging F-104Gs, when the AF announced its "Light Weight Fighter" (LWF) program (8, 27-28).

Considerable concern had been brewing in Washington over the price of combat aircraft, specifically the F-15. Few doubted that this would be a superb fighter, but it began to look as if it would be impossible to buy in the quantities needed (8, 28). The

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LWF program arose partly out of this growing concern with the rising costs of each new generation of fighters. It also arose from some who suggested that maneuverability was more important to the success of a fighter aircraft than the Air Force's growing reliance on radars and air-to-air missiles. The "Light Weight Fighter Mafia" in the Pentagon was concerned about the sophistication and cost of the F-15, and this led them to propose a new concept for an aircraft which eventually became the LWF. Their efforts were aided by Deputy Defense Secretary David Packard's emphasis on prototyping, which was enjoying renewed popularity in Congress as the costs of the F-15 and the Navy's F-14 became known. The political and organizational stage was set for developing real alternatives to the ongoing F-15 project (13, 76).

These alternatives were to become a reality when in December 1974, the AF selected the YF-16 as its "Air Combat Fighter" (ACF) to be a complement or alternative to the F-15 in the US, and as a competitor for Europe's F-104G replacement (8, 29; 13, 78).

The Major Players

Let's now introduce the players in this bureaucratic political game who exerted the greatest influence.

The Light Weight Fighter Mafia

In the mid-1960s, three individuals emerged who would have a huge influence on the eventual procurement of the F-16: Pierre Sprey, a Pentagon analyst, engineer, and statistician; AF Major John Boyd, a fighter pilot well known for his theories on maneuverability and tactics; and AF Colonel Everest Riccioni. Their effort sprang from concern over the cost of the F-15 which could potentially leave the AF outnumbered and outfought. They expressed a willingness to sacrifice some capability for a less expensive plane. In fact, less weight, cost, and electronics might actually produce a better aircraft (4, 100-102). In short, the fighter mafia wanted to diverge from the historical tendency toward increasing technical complexity, which only led to fewer and

less reliable aircraft, flying lower sortie rates, by less proficient pilots (4, 38). Their combined efforts succeeded in getting the technology demonstration which, with the help of other players, resulted in the decision to produce the Air Combat Fighter.

McNamara and Packard

Serious technical and cost problems in some of the weapons Secretary of Defense Robert McNamara set into development left the acquisition process as controversial when he left office as it had been when he entered it. In the late 1950s, Congress became concerned with interservice rivalry and duplication in weapons procurement. When he became the secretary, McNamara also was concerned with duplication and tried to eliminate it, most notably in the F-111, but at the cost of building problems into the weapons development process. His efforts were primarily focused on the management of individual projects, especially poor performance and cost overruns. However, the F-111 and the C-5 became the target of strong Congressional and public criticism of acquisition management (13, 66).

As a result, early in his administration President Nixon appointed the Fitzhugh Commission to examine defense procurement policies and practices, particularly relating to cost, time, and quality. The commission thoroughly indicted McNamara's "Total Package Approach" to procurement. The effort to put the Fitzhugh lessons into practice fell to Deputy Defense Secretary David Packard, an industrialist with considerable defense experience. Packard's directives established the basic approach to weapons acquisition still, to a degree, in practice today. His goals were to increase independent testing, establish cost as a production criterion, reduce production concurrency with testing, use prototyping ("fly-before-you-buy"), restore competition, and establish the Defense System Acquisition Review Council (DSARC) (13, 66-68; 18, 100).

NATO Nations

The decisions surrounding the replacement of the F-104G in Belgium, Denmark, the Netherlands, and Norway are a study in confusing and fluctuating bureaucratic

politics in their own right. Indeed, this arms deal, called by the French the "contract of the century," played a significant role in the eventual purchase of the F-16 in the US (7, 883).

Other Players

In addition to the three major "players" in this procurement decision, a number of others played significant roles in making things happen. These included contractors, the Congress, the press, the US Navy, the Pentagon procurement bureaucracy, and key civilian and military leaders within DoD.

The Game

Independently, and almost concurrently, three major forces acted to produce the conditions perfect for the development of an austere, air combat fighter: the NATO buy, acquisition reform, and the LWF mafia initiatives.

NATO Looks for an F-104 Replacement

As the 1960s drew to a close, the NATO air forces increasingly began to consider a replacement for the F-104G. In anticipation, as early as 1966 Northrop, with company money, began to develop a new fighter to meet the coming need and created the P-530 Cobra. Over the next few years, the Cobra program firmed up, with Northrop conducting negotiations with several customers in Europe for a potential deal for 1,000 Cobras. By 1971, Northrop appeared to have the inside track in competition with European designs, when the US Air Force rather suddenly announced the LWF demonstration, putting the European replacement issue on hold (8, 27-28). It was becoming clear that the European market could mean the sale of as many as 2,000 aircraft. Moreover, NATO countries were likely to be interested in an aircraft backed by the US Air Force (20, 54).

Acquisition Reforms

As events transpired in Europe, and in spite of David Packard's May 1970 directives, inertia in the procurement process continued some of the same behaviors as before. Though testing increased, production concurrency retained its popularity. The

F-15 was developed when the services were supposed to comply with the fly-before-you-buy directives. But, the initial production decision for the F-15 occurred just four months after the plane's first flight. Additionally, the DSARC process, rather than controlling acquisition decision making, actually furthered bureaucratic consensus building and the tendency to enhance technical requirements upward (along with cost). As development of weapons continued, the political dangers connected with breaking the established consensus encouraged program managers to accept cost growth rather than sacrifice performance. Thus, the seeming rationality of Packard's decision structure masked a reality shaped by powerful underlying political and organizational forces (13, 70-76).

The F-15 became the most illustrative example of this trend. With calls in Congress and the press to address the programmatic and cost problems of the F-15, the LWF presented itself as an attractive potential solution. Many of the Packard initiatives would be seen in the LWF program: prototyping, fly-before-you-buy, independent testing, design-to-cost, competition among contractors, and controlled decision points (13, 67-68).

The Packard reforms were very popular with Congress, whose increasing oversight of acquisition continued a trend begun with the passage of the DoD Reorganization Act of 1958. This legislation produced a big increase in the number of institutional actors with some claim of a formal role in weapons acquisition (13, 85). As the war in Southeast Asia wound down in the early 1970s, Congress sought lower defense budgets and greater efficiency in acquisition. The growth in Congressional staffs and greater interest in procurement increased involvement and oversight, in turn reinforcing the bureaucratic processes in the Pentagon procurement system (13, 68-73). The LWF was very much an attempt to streamline the procurement process and an opportunity to purchase a less expensive alternative to the latest generation of fighters (F-15 and F-14). It also offered an opportunity to satisfy strong Congressional pressures to

develop a fighter to satisfy the needs of both the AF and Navy. In fact, Congress directed the Navy to purchase a derivative of the aircraft chosen by the AF in the LWF demonstration. Ultimately, the Navy did not find the F-16 derivative carrier suitable and selected the YF-17 derivative, designated the F-18 (22, 4: 12, 18: 1, 1240).

The Fighter Mafia is Born

Meanwhile, during the '60s, John Boyd was developing his innovative energy-maneuverability theory to explain the importance of maneuverability as a key factor in fighter success. In fact, his efforts were partly successful in reducing the F-15's size, weight, and cost (13, 76). Boyd had expanded his studies in a series of briefings in which he emphasized maneuver, deception, surprise, and confusion as key principles in warfare which, if followed, would yield a military establishment far different from the one the US had created. His approach placed a premium on simple, reliable, and adaptable weapons that could be produced quickly (4, 28-29).

For over 12 years, Pierre Sprey had analyzed air combat and, like Boyd, emphasized non-traditional factors in the success of air combat rather than the traditional factors of speed and avionics. These included surprise (killing an enemy aircraft without alerting him to our presence), numerical superiority (with simple, cheap planes flown by proficient pilots), maneuverability (from Boyd's theories), and lethality (quick entry into firing envelopes with reliable weapons). Showing that for the same amount of money, the AF would get 42 times the sorties per day as an F-86, he described the aircraft that was needed: cheap, small, light, passive electronics only, improved gun, Sidewinder missiles, and a radical elimination of specifications and equipment (4, 95-100). Much of Sprey's work was expressed in the "FX^2" study. However, his call for an austere fighter was strongly opposed by the services primarily because it was viewed as a substitute rather than a complement to the ongoing F-15 and F-14 projects (9, 9). In 1970, Sprey went public with a concept of a small, high

performance fighter, in a speech to the American Institute of Aeronautics and Astronautics in St. Louis (4, 102-103).

In January 1970, Everest Riccioni became the head of a small development planning office in the Pentagon with the authority to sponsor new designs. In the summer of 1970, Riccioni discovered that the Navy might be well along in the production of a low-cost fighter of its own. If the Navy succeeded, the AF might be obliged to accept and buy a Navy plane (4, 102-103).

By this time, Boyd, Sprey, and Riccioni, each working in the Pentagon, began to synthesize their ideas. Boyd brought his technical and tactical expertise, Sprey engineering and statistical analysis, and Riccioni the managerial and programmatic experience to form the nucleus of the LWF Mafia. Pooling their concepts, Riccioni prepared a briefing for a low-cost plane which he called the "Falcon," asserting the AF needed to study a high performance austere fighter as a necessary complement to other air superiority aircraft in the inventory. The result was the LWF Mafia's first significant victory when the AF, threatened with the Navy effort and cost considerations, authorized $149,000 to study designs of a lightweight plane. Contractors read this as the first official indication of a serious interest from the AF for a possible large follow-on purchase (4, 102-103). It must be pointed out, however, that a considerable amount of behind the scenes work had been accomplished by the LWF Mafia directly with industry throughout the project (3, 17). In fact, both Northrop and GD had provided substantial technical input to the "FX^2" study (5, 8).

The LWF Demo Begins

In January 1972, requests for proposals to build two prototype lightweight fighters went out to nine aircraft builders. The LWF project was funded under DoD's Advanced Prototype Development Program as a technology demonstration project for a low-cost, lightweight, high thrust-to-weight, aerodynamic fighter (11, 20). The evaluation was accomplished outside the formally established acquisition bureaucracy.

A short, performance-oriented requirements document left competing contractors to design and test prototypes during an extensive, year-long test phase. The LWF project was sold to Congress as an austere competitive development involving the popular "fly-before-you-buy" principle (13, 77). It ostensibly began as an exercise merely to see how feasible it would be to fly useful military missions with a fighter significantly smaller and cheaper than the F-15. It the answer was positive, there was a chance that an aircraft in this category might be procured for the AF after a follow-on competition (8, 28).

Beginning to emerge was the concept of a "high-low mix"--a force posture of sophisticated weapons backed by a larger number of simpler and less expensive systems (13, 77). Budgetary realities and operating costs were beginning to make it clear that a mix of F-15s and lower cost LWFs would meet the AF future needs better than a smaller number of F-15s (19, 58).

In January 1972, Northrop and General Dynamics (GD) were selected as the two competing contractors (13, 77). GD produced the Model 401, later redesignated the YF-16, while Northrop introduced a simpler version of the P-530 Cobra called the P-600, later to become the YF-17. GD maintained a challenging pace and flew the first YF-16 in January 1974, while Northrop did not get the first YF-17 into the air until June. The intent was to conduct a fairly leisurely competitive evaluation of the two pairs of aircraft at Edwards AFB, and come to a decision in late 1975 regarding the operational value of a LWF. The whole industry might then be invited to submit proposals for a production LWF to enter service in the 1980s (8, 28).

Schlesinger Transforms the LWF Demo

By early 1974, Belgium, the Netherlands, Denmark, and Norway were negotiating with several aircraft manufacturers, including Dassault and Saab, for the F-104G replacement. The emergence of this big market in Europe for an aircraft in the class and price of a LWF cut short the demonstration. Essentially abandoning the whole planned

LWF project, Defense Secretary James Schlesinger announced in April 1974 there would be an accelerated fly-off between the YF-16 and YF-17, that one would be chosen as the Air Force's new "Air Combat Fighter" (ACF), a missionized fighter derived from the LWF, and the AF would place an immediate order for 650 aircraft. Additionally, a major part of this force would be stationed in Europe, along with a newly designed, computerized logistics system. Also, this aircraft would be entered in the competition for a fighter to replace the F-104G in Europe. All of this made it necessary to choose the winning contractor by January 1975 before Northrop had completed its year of testing (13, 77; 8, 28-29; 6, 34; 3).

The technology demonstration had been quickly transformed into a major procurement program, and the US immediately began formal discussions with the four key European nations (8, 28-29). The procurement announcement gave the ACF quick credibility with the Europeans, demonstrating that the AF was definitely planning to order the new fighter (1, 1240). The US decision took the risk out of "buying American," overcoming the French argument that the US was attempting to sell its friends an airplane not good enough for its own Air Force (14, 22; 15, 34). In May 1974, the four nations formed a permanent steering committee to study the problem and recommend a solution. That same month, GD came to Europe for the first time to promote the YF-16. From this point on, lengthy and complicated negotiations and studies ensued, with considerable backroom political and financial horsetrading, though it was clear that the four nations were determined to buy a common type aircraft.

In December 1974, the AF selected the F-16. At one time, the Europeans had favored a two-engine fighter (unlike the single-engine F-16), but any concerns seemed abated when Secretary Schlesinger stated in January 1975 that one of the main reasons for selecting the F-16 was its use of a single, proven engine (the F-100 engine from the F-15), which would save "some $300 million" in fuel bills compared to the twin-engined F-17 over a 15-year period. In March 1975, the European Steering Committee reported

unanimously that the YF-16 had undisputed advantages. The choice of the F-16 for Europe was announced at the Paris Air Show in June (8, 29-30).

Force Structure Bargaining

Up to this time there had been noticeable resistance within the AF, except for the LWF Mafia, toward the LWF project. Again, this was largely due to the Air Force's commitment to the ongoing F-15 project. However, as the LWF program grew, Defense Secretary Schlesinger became more and more of an advocate, by 1974 adopting the program as his own (10, 187). To overcome the resistance, Schlesinger confronted the AF with a choice of buying a limited number of F-15s, with the current force structure, or enlarging the force structure by substituting less expensive F-16s (13, 77). There were reports that McDonnell-Douglas offered to reduce the F-15's unit price to near that of the ACF if the AF procured additional F-15s rather than the 650 ACFs (7, 885). However, DoD insiders claim the closest the ACF's price ever was to an F-15 was approximately two-thirds (3). Given that the force posture implications of the F-15's cost were troubling to the AF, the decision was easy (13, 77). AF Chief of Staff David Jones did some shrewd bargaining, and accepted the F-16 for four additional fighter wings, expanding to a total of 26 (16, 269; 3).

Making the LWF a Mission-Capable Fighter

The technology and low price of the prototype ACFs were impressive. What remained, however, was the issue of what needed to be accomplished to make the new airplane a mission-capable fighter. It was this issue that has stirred considerable debate from 1974 to the present.

The original technical specifications for manufacture of the LWF prototype, written in 1970, were oriented toward technology demonstration, not combat fighter procurement. The prototypes were extremely austere: no radar, no gun, very small size, no hard ordnance points. Technical specifications were purposely simple in keeping with

the original LWF Mafia concept (4, 103-105). The airplane was envisioned to be a daytime, clear weather fighter with an extremely austere avionics suite (21, 65-67).

Early on, some recognized the ACF would be a quite different airplane from the LWF prototype. Lt Gen James Stewart, Commander of AF Systems Command's Aeronautical Systems Division as early as 1974 confirmed there was no way the AF could "live with the barebone avionics of the prototype vehicles." At that time, proposals for radars were being accepted for the ACF, as well as ways to squeeze as much air-to-ground capability into the aircraft as possible (19, 56-61). The price was likewise barebones, predicated on equipment similar to that of the prototypes (just airframe, engine, and simple avionics) (20, 51).

The effort to turn the LWF into the F-16 was viewed by its many advocates as a rejection of the entire philosophy under which the plane had been designed. The LWF Mafia's concerns were overcome when the Secretary of Defense, long a LWF advocate himself, chose not to fight the addition of specifications. Additionally, the plane's mission was redefined. Instead of being a pure air-to-air fighter, it was converted to a multi-mission airplane like the F-4 it ultimately replaced. Unfortunately, the structural and electronic changes to accommodate additional avionics, radar, ECM systems, and ordnance capacity increased weight, raised cost, and degraded performance (4, 105-106).

Moreover, once the process was turned over to the AF from DARPA, it was subjected to the same managerial practices applied to other mainstream systems. The program office grew, a more detailed set of requirements were written, and the F-16 was rushed into production with roughly the same concurrency as the F-111 and F-15 (13, 78). Some would later claim that the resistance to the LWF within the AF development bureaucracy resulted in a series of modifications to the original design which showed up as defects and compromises to the plane AF pilots actually flew (4, 95).

Summary and Conclusions

The AF took delivery of the first operational F-16 in January 1979. It was the first American fighter that cost less than the preceding model. It was the product of a fundamentally different approach to defining the purposes of combat aircraft and the means of producing them (4, 95).

But, the F-16 was also the product of a classic bureaucratic political game. Major forces were at work concurrently to make the technology demonstration possible in the first place. A small but passionate group within the AF pushed a revolutionary concept at a time when a huge overseas buy was imminent. A Congress and press growing increasingly concerned with the costs, complexities, and inefficiencies of major weapon systems teamed with a Deputy Defense Secretary charged with implementing acquisition reform to provide an environment uniquely suited to nurturing the idea. Key players then turned the demonstration into a production aircraft. A new-found advocate in the form of the Defense Secretary offered the AF an opportunity to increase force structure by taking a less expensive, and less sophisticated aircraft. The outcome was a fighter which would comprise the bulk of the fighter force of the US and its allies in the 1990s.

Did the AF get what it needed? Was it served by the bureaucratic process which delivered the F-16? This is an issue about which there is considerable, heated debate. But apart from considering the technical aspects of combat capability, and without comparing the cost-benefit tradeoffs of various fighters, one can still conclude that the complex process of procuring major weapons systems is, without question, the product of a bureaucratic game--serious nevertheless--involving a variety of players, sometimes from unpredictable sources, making an untold number of bargains and compromises. Whatever its faults, this process is responsible for providing the Air Force with the best fighter aircraft in the world.

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